

## CLAIMS

What is claimed is:

1. A method of facilitating the formation of a BIC between one or more buyers and one more sellers, for use as a building block in the formation of any financial derivatives contract, where both said BIC and said financial derivatives contract pertain to any number of underlyings, in a single or multi-period trading framework, for any notional amount, said method comprising the steps of:

- a. establishing a BIC-basis;
- b. identifying agreement terms of said BIC, including at least:
  - information to identify said one or more buyers and said one or more sellers,
  - a contract time indicating when said BIC will become binding,
  - a premium payment time posterior or equal in time to said contract time,
  - a payout payment time posterior or equal in time to said premium payment time,
  - a premium payment amount to be paid by said one or more buyers to said one or more sellers, expressed in the format of a function of observed values of the one or more underlyings from said contract time up to and including said premium payment time, and,
  - a payout payment amount, expressed in the format of a function of observed values of the one or more underlyings from said contract time up to and including said payout payment time; and,
- c. validating said BIC reflecting the agreement terms.

2. The method of claim 1 wherein step a) further comprises specifying the format of the payout payment amount of said BICs, in units of base currency by said one or more sellers to said one or more buyers.

3. The method as in claim 2, wherein said payout payment amount is expressed in a format selected from the group consisting of the EOFBICP format, the EADFBICP

format, the EFTFBICP format and the EHPFBICP format.

4. A system of facilitating the formation of a BIC between one or more buyers and one more sellers, for use as a building block in the formation of any financial derivatives contract, where both said BIC and said financial derivatives contract pertain to any number of underlyings, in a single or multi-period trading framework, for any notional amount, said system comprising:

- a. means for establishing a BIC-basis;
- b. means for identifying agreement terms of said BIC, including at least:
  - information to identify said one or more buyers and said one or more sellers,
  - a contract time indicating when said BIC will become binding,
  - a premium payment time posterior or equal in time to said contract time,
  - a payout payment time posterior or equal in time to said premium payment time,
  - a premium payment amount to be paid by said one or more buyers to said one or more sellers, expressed in the format of a function of observed values of the one or more underlyings from said contract time up to and including said premium payment time, and,
  - a payout payment amount, expressed in the format of a function of observed values of the one or more underlyings from said contract time up to and including said payout payment time; and,
- c. means for validating said BIC reflecting the agreement terms.

5. The system as in claim 4 wherein step a) further comprises specifying the format of the payout payment amount of said BICs, in units of base currency by said one or more sellers to said one or more buyers.

6. The system as in claim 5, wherein said payout payment amount is expressed in a format selected from the group consisting of the EOFBICP format, the EADFBICP

format, the EFTFBICP format and the EHPFBICP format.

7. A computer program product for facilitating the formation of a BIC, between one or more buyers and one more sellers, for use as a building block in the formation of any financial derivatives contract, where both said BIC and said derivatives contract pertain to any number of underlyings, in a single or multi-period trading framework, for any notional amount, said computer program product comprising:  
a computer usable medium having computer-readable code means embodied in said medium, said computer-readable code means comprising computer readable code means for:

- a. establishing a BIC-basis;
- b. identifying agreement terms of said BIC, including at least:
  - information to identify said one or more buyers and said one or more sellers,
  - a contract time indicating when said BIC will become binding,
  - a premium payment time posterior or equal in time to said contract time,
  - a payout payment time posterior or equal in time to said premium payment time,
  - a premium payment amount to be paid by said one or more buyers to said one or more sellers, expressed in the format of a function of observed values of the one or more underlyings from said contract time up to and including said premium payment time, and,
  - a payout payment amount, expressed in the format of a function of observed values of the one or more underlyings from said contract time up to and including said payout payment time; and,
- c. validating said BIC reflecting the agreement terms.

8. The computer program product of claim 7 wherein step a) further comprises computer-readable code means for specifying the format of the payout payment amount of said BICs, in units of base currency by said one or more sellers to said one

or more buyers.

9. The computer program product of claim 8, wherein said payout payment amount is expressed in in a format selected from the group consisting of the EOF-BICP format, the EADFBICP format, the EFTFBICP format and the EHPFBICP format.

10. A method of facilitating the formation of any financial derivatives contract between one or more buyers and one more sellers, for any number of underlyings, in a single or multi-period trading framework, for any notional amount comprising the steps of:

- a. identifying agreement terms of said derivatives contract, including:
  - information to identify said one or more buyers and said one or more sellers,
  - a contract time indicating when said derivatives contract will become binding,
  - a premium payment time posterior or equal in time to said contract time,
  - a payout payment time, posterior or equal in time to said premium payment time,
  - a premium payment amount to be paid by said one or more buyers to said one or more sellers, expressed in the format of a function of observed values of the one or more underlyings from said contract time up to and including said premium payment time, and,
  - a payout payment amount, expressed in the DCWBSOF format; and,
- b. validating said derivatives contract reflecting the agreement terms.

11. A system for facilitating the formation of any financial derivatives contract between one or more buyers and one more sellers, for any number of underlyings, in a single or multi-period trading framework, for any notional amount, comprising:

- a. means for identifying agreement terms of said derivatives contract, including:

- information to identify said one or more buyers and said one or more sellers,
  - a contract time indicating when said derivatives contract will become binding,
  - a premium payment time posterior or equal in time to said contract time,
  - a payout payment time, posterior or equal in time to said premium payment time,
  - a premium payment amount to be paid by said one or more buyers to said one or more sellers, expressed in the format of a function of observed values of the one or more underlyings from said contract time up to and including said premium payment time, and,
  - a payout payment amount, expressed in the DCWBSOF format; and,
- b. means for validating said derivatives contract reflecting the agreement terms.

12. A computer program product for facilitating the formation of any financial derivatives contract between one or more buyers and one more sellers, for any number of underlyings, in a single or multi-period trading framework, for any notional amount, comprising:

a computer usable medium having computer-readable code means embodied in said medium, said computer-readable code means comprising computer readable code means for:

- a. identifying agreement terms of said derivatives contract, including:
  - information to identify said one or more buyers and said one or more sellers,
  - a contract time indicating when said derivatives contract will become binding,
  - a premium payment time posterior or equal in time to said contract time,
  - a payout payment time, posterior or equal in time to said premium payment time,
  - a premium payment amount to be paid by said one or more buyers to said one or more sellers, expressed in the format of a function of observed values of the one or more underlyings from said contract time up to and including said premium payment

time, and,

- a payout payment amount, expressed in the DCWBSOF format; and,
- b. validating said derivatives contract reflecting the agreement terms.

13. A method for compressing the format of the payout payment function of a derivatives contract on one or more underlyings, for a single or multi-period trading framework, for any notional amount, to facilitate decomposition into one or more BICs, said method comprising the steps of:

a. receiving said payout payment function expressed in DCWBSOF format , where said DCWBSOF format is a function of both

-observed values of the one or more underlyings from a designated contract time up until and including a designated payout payment time, and,

-parameters representing value choices available to said one or more buyers and said one or more sellers from said contract time up to and including said designated payout payment time; and,

b. transforming said payout payment function expressed in said DCWBSOF format into DCWOF format, where said DCWOF format is a function of the observed values of the one or more underlyings from said contract time up until and including said payout payment time but not parameters representing value choices available to said one or more buyers and said one or more sellers from said contract time up to and including said designated payout payment time.

14. The method of claim 13 wherein said transforming step comprises:

iteratively assigning to the parameters, value choices to be made by the one or more buyers, in reverse chronological order, from said payout payment time to said contract time, whereby said value choices maximize, at each time step of the iterative process, the value of the contract to the one or more buyers.

15. The method of claim 13 wherein said transforming step comprises:

iteratively assigning to the parameters, value choices to be made by the one or more sellers, in reverse chronological order, from said payout payment time to said contract time, whereby said value choices minimize, at each time step of the iterative process, the value of the contract to the one or more sellers.

16. A system for compressing the format of the payout payment function of a derivatives contract on one or more underlyings, for a single or multi-period trading framework, for any notional amount, to facilitate decomposition into one or more BICs, said system comprising:

a. means for receiving said payout payment function expressed in DCWBSOF format, where said DCWBSOF format is a function of both

-observed values of the one or more underlyings from a designated contract time up until and including a designated payout payment time, and,

-parameters representing value choices available to said one or more buyers and said one or more sellers from said contract time up to and including said designated payout payment time; and,

b. means for transforming said payout payment function expressed in said DCWBSOF format into DCWOF format, where said DCWOF format is a function of the observed values of the one or more underlyings from said contract time up until and including said payout payment time but not parameters representing value choices available to said one or more buyers and said one or more sellers from said contract time up to and including said designated payout payment time.

17. The system of claim 16 wherein said means for transforming comprises:

means for iteratively assigning to the parameters, value choices to be made by the one or more buyers, in reverse chronological order, from said payout payment time to said contract time, whereby said value choices maximize, at each time step of the

iterative process, the value of the contract to the one or more buyers.

18. The system of claim 16 wherein said means for transforming comprises:

means for iteratively assigning to the parameters, value choices to be made by the one or more sellers, in reverse chronological order, from said payout payment time to said contract time, whereby said value choices minimize, at each time step of the iterative process, the value of the contract to the one or more sellers.

19. A computer program product for compressing the format of the payout payment function of a derivatives contract on one or more underlyings, for a single or multi-period trading framework, for any notional amount, to facilitate decomposition into one or more BICs, said computer program product comprising a computer usable medium having computer-readable code means embodied in said medium, said computer-readable code means comprising computer readable code means for:

a. receiving said payout payment function expressed in DCWBSOF format , where said DCWBSOF format is a function of both

-observed values of the one or more underlyings from a designated contract time up until and including a designated payout payment time, and,

-parameters representing value choices available to said one or more buyers and said one or more sellers from said contract time up to and including said designated payout payment time; and,

b. transforming said payout payment function expressed in said DCWBSOF format into DCWOF format, where said DCWOF format is a function of the observed values of the one or more underlyings from said contract time up until and including said payout payment time but not parameters representing value choices available to said one or more buyers and said one or more sellers from said contract time up to and including said designated payout payment time.



20. The computer program product of claim 19 wherein in part b), the transforming step comprises:

iteratively assigning to the parameters, value choices to be made by the one or more buyers, in reverse chronological order, from said payout payment time to said contract time, whereby said value choices maximize, at each time step of the iterative process, the value of the contract to the one or more buyers.

21. The computer program product of claim 19 wherein in part b), the transforming step comprises:

iteratively assigning to the said parameters, value choices to be made by the one or more sellers, in reverse chronological order, from said payout payment time to said contract time, whereby said value choices minimize, at each time step of the iterative process, the value of the contract to the one or more sellers.

22. A method for transforming an initial derivatives contract, on one or more underlyings, for a single or multi-period trading framework, for any notional amount, into an ultimate portfolio of replicating BICs, for valuation and hedging purposes, said method comprising:

- a. receiving a BIC-basis;
- b. receiving the payout payment function for said derivatives contract;
- c. receiving prices for elements of said BIC-basis; and,
- d. performing an iterative process to return said ultimate portfolio of replicating BICs.

23. The method of claim 22 comprising receiving the payout payment function of the derivatives contract in step a) in the DCWOF format.

24. The method of claim 22 further comprising deriving the best hedge of said

initial derivatives contract using a limited set of other derivatives contracts comprising:

- a. receiving said limited set of other derivatives contracts, where each of the other derivatives contracts within the set are considered elements of the set;
- b. obtaining a residual replicating portfolio of BICs in a given BIC-basis associated with a separate derivatives contract whose payout payment function is the difference between the initial derivatives contract and any arbitrary linear combination of the payout payment function of each element of the set of other derivatives contracts;
- c. selecting a preferred norm for the space of all derivatives contracts that depends on the BIC-basis and applying said norm to the residual replicating portfolio of b) ; and,
- d. deriving the best hedging notional amount for each element of the limited set of other derivatives contracts of step a) by selecting the particular linear combination of step b) that minimizes the norm of the residual replicating portfolio of step c).

25. The method of claim 22 wherein the iterative process of step d comprises:

- a. initiating the iterative process by selecting a relevant payout payment function, where said relevant payout payment function is the payout payment function of said initial derivatives contract for the first loop of said iterative process;
- b. extracting a subset of replicating BICs, in the form of a basis vector, from the BIC-basis, by choosing all those BICs of said BIC-basis having a payout payment time equal to the payout payment time of said relevant payout payment function of step a);
- c. associating a notional value to each of the BICs of the subset of replicating BICs of step b) to form a portfolio of replicating BICs, said notional values derived from the payout payment function of step a);
- d. comparing the premium payment time of said portfolio of replicating BICs of step c) with the premium payment time of the initial derivatives contract to deter-

mine whether a pre-determined termination criterion has been met and stopping the iterative process if the termination criterion has been met;

e. initiating a subsequent loop of the iterative process if the termination criterion has not been met by providing the payout payment function associated with the portfolio of step c) as the relevant payout payment for step a) in the subsequent loop;

f. accumulating the portfolio of replicating BICs from step c) of each loop to form the ultimate portfolio of replicating BICs for the initial derivatives contract.

26. The method of claim 25 further comprising adapting the notional values of step c), via linear transformation of the payout payment function of step a), to conform to the specific form of representation of the subset of replicating BICs of step b).

27. The method of claim 25 wherein the termination criterion of step d) is reached when the premium payment time of said portfolio of replicating BICs is equal to or less than the premium payment time of the initial derivatives contract.

28. The method of claim 25 further comprising receiving the payout payment function of the derivatives contract in the DCWBSOF format and transforming said DCWBSOF format into the DCWOF format.

29. The method of claim 25 wherein step d) further comprises providing a premium payment amount for said initial derivatives contract upon satisfying the termination criterion, where said premium payment amount is the premium payment amount associated with the portfolio of replicating BICs of step c) of the final loop of the iterative process.

30. The method of claim 29 wherein classical mathematical reduction methods are used to compute the premium payment amount of said derivatives contract.

31. The method of claim 30 wherein the mathematical reduction methods include changes of variables on the underlyings or integration approximation methods.

32. The method of claim 31, wherein the integration approximation methods include sparse selection of points methods.

33. The method of claim 32 wherein the sparse selection of points method is chosen from the group consisting of Gaussian quadratures, Low discrepancy deterministic sequences, Halton points, and Sobol points.

34. A system for transforming an initial derivatives contract, on one or more underlyings, for a single or multi-period trading framework, for any notional amount, into an ultimate portfolio of replicating BICs, for valuation and hedging purposes, said system comprising:

- a. means for receiving a BIC-basis;
- b. means for receiving the payout payment function for said derivatives contract;
- c. means for receiving prices for elements of said BIC-basis; and,
- d. means for performing an iterative process to return said ultimate portfolio of replicating BICs.

35. The system of claim 34 further comprising means for deriving the best hedge of said initial derivatives contract using a limited set of other derivatives contracts comprising:

- a. means for receiving said limited set of other derivatives contracts, where each of the other derivatives contracts within the set are considered elements of the set;
- b. means for obtaining a replicating portfolio of BICs in a given BIC-basis associated with a separate derivatives contract whose payout payment function is the

difference between the initial derivatives contract and any arbitrary linear combination of the payout payment function of each element of the set of other derivatives contracts;

c. means for selecting a preferred norm for the space of all derivatives contracts that depends on the BICs-basis and applying said norm to the residual replicating portfolio of b); and,

d. means for deriving the best hedging notional amount for each element of the limited set of other derivatives contracts of step a) by calculating the linear combination of step b) that minimizes the norm of step c) of the separate derivatives contract of step b).

36. The system of claim 34 further comprising means for receiving the payout payment function of the derivatives contract in step a) in the DCWOF format.

37. The system of claim 34 wherein the iterative process of step d comprises:

a. means for initiating the iterative process by selecting a relevant payout payment function, where said relevant payout payment function is the payout payment function of said initial derivatives contract for the first loop of said iterative process;

b. means for extracting a subset of replicating BICs, in the form of a basis vector, from the BIC-basis, by choosing all those BICs of said BIC-basis having a payout payment time equal to the payout payment time of said relevant payout payment function of step a);

c. means for associating a notional value to each of the BICs of the subset of replicating BICs of step b) to form a portfolio of replicating BICs, said notional values derived from the payout payment function of step a);

d. means for comparing the premium payment time of said portfolio of replicating BICs of step c) with the premium payment time of the initial derivatives contract to determine whether a pre-determined termination criterion has been met and stopping

the iterative process if the termination criterion has been met;

e. means for initiating a subsequent loop of the iterative process if the termination criterion has not been met by providing the payout payment function associated with the portfolio of step c) as the relevant payout payment for step a) in the subsequent loop;

f. means for accumulating the portfolio of replicating BICs from step c) of each loop to form the ultimate portfolio of replicating BICs for the initial derivatives contract.

38. The system of claim 37 wherein the termination criterion of step d) is reached when the premium payment time of said portfolio of replicating BICs is equal to or less than the premium payment time of the initial derivatives contract.

39. The system of claim 37 comprising means for adapting the notional values of step c), via linear transformation of the payout payment function of step a), to conform to the specific form of representation of the subset of replicating BICs of step b).

40. The system of claim 37 further comprising means for receiving the payout payment function of the derivatives contract in the DCWBSOF format and transforming said DCWBSOF format into the DCWOF format.

41. The system of claim 37 wherein step d) further comprises means for providing a premium payment amount for said initial derivatives contract upon satisfying the termination criterion, where said premium payment amount is the premium payment amount associated with the portfolio of replicating BICs of step c) of the final loop of the iterative process.

42. The system of claim 41 wherein classical mathematical reduction methods are used to compute the premium payment amount of said derivatives contract.

43. The system of claim 42 wherein the mathematical reduction methods include changes of variables on the underlyings or integration approximation methods.

44. The system of claim 43, wherein the integration approximation methods include sparse selection of points methods.

45. The system of claim 44 wherein the sparse selection of points method is chosen from the group consisting of Guassian quadratures, Low discrepancy deterministic sequences, Halton points, and Sobol points.

46. A computer program product for transforming an initial derivatives contract, on one or more underlyings, for a single or multi-period trading framework, for any notional amount, into an ultimate portfolio of replicating BICs, for valuation and hedging purposes, said computer program product comprising:  
a computer usable medium having computer-readable code means embodied in said medium, said computer-readable code means comprising computer readable code means for:

- a. receiving a BIC-basis;
- b. receiving the payout payment function for said derivatives contract;
- c. receiving prices for elements of said BIC-basis; and,
- d. performing an iterative process to return said ultimate portfolio of replicating BICs.

47. The computer program product of claim 46 further comprising computer readable code means for deriving the best hedge of said initial derivatives contract using simply a limited set of other derivatives contracts comprising computer readable code means for:

- a. receiving said limited set of other derivatives contracts, where each of the other derivatives contracts within the set are considered elements of the set;
- b. obtaining a replicating portfolio of BICs in a given BIC-basis associated with a separate derivatives contract whose payout payment function is the difference between the initial derivatives contract and any arbitrary linear combination of the payout payment function of each element of the set of other derivatives contracts;
- c. selecting a preferred norm for the space of all derivatives contracts that depends on the BICs-basis and applying said norm to the residual replicating portfolio of b); and,
- d. deriving the best hedging notional amount for each element of the limited set of other derivatives contracts of step a) by calculating the linear combination of step b) that minimizes the norm of step c) of the separate derivatives contract of step b).

48. The computer program product of claim 46 comprising computer readable code means for receiving the payout payment function of the derivatives contract in step a) in the DCWOF format.

49. The computer program product of claim 46 wherein the iterative process of step d comprises computer readable code means for:

- a. initiating the iterative process by selecting a relevant payout payment function, where said relevant payout payment function is the payout payment function of said initial derivatives contract for the first loop of said iterative process;
- b. extracting a subset of replicating BICs, in the form of a basis vector, from the BIC-basis, by choosing all those BICs of said BIC-basis having a payout payment time equal to the payout payment time of said relevant payout payment function of step a);
- c. associating a notional value to each of the BICs of the subset of replicating BICs of step b) to form a portfolio of replicating BICs, said notional values derived from



the payout payment function of step a);

d. comparing the premium payment time of said portfolio of replicating BICs of step c) with the premium payment time of the initial derivatives contract to determine whether a pre-determined termination criterion has been met and stopping the iterative process if the termination criterion has been met;

e. initiating a subsequent loop of the iterative process if the termination criterion has not been met by providing the payout payment function associated with the portfolio of step c) as the relevant payout payment for step a) in the subsequent loop;

f. accumulating the portfolio of replicating BICs from step c) of each loop to form the ultimate portfolio of replicating BICs for the initial derivatives contract.

50. The computer program product of claim 49 wherein the termination criterion of step d) is reached when the premium payment time of said portfolio of replicating BICs is equal to or less than the premium payment time of the initial derivatives contract.

51. The computer program product of claim 49 further comprising computer readable code means for adapting the notional values of step c), via linear transformation of the payout payment function of step a), to conform to the specific form of representation of the subset of replicating BICs of step b).

52. The computer program product of claim 49 further comprising computer readable code means for receiving the payout payment function of the derivatives contract in the DCWBSOF format and transforming said DCWBSOF format into the DCWOF format.

53. The computer program product of claim 49 wherein step d) further comprises computer readable code means for providing a premium payment amount for said

initial derivatives contract upon satisfying the termination criterion, where said premium payment amount is the premium payment amount associated with the portfolio of replicating BICs of step c) of the final loop of the iterative process.

54. The computer program product of claim 53 wherein classical mathematical reduction methods are used to compute the premium payment amount of said derivatives contract.

55. The computer program product of claim 54 wherein the mathematical reduction methods include changes of variables on the underlyings or integration approximation methods.

56. The computer program product of claim 55, wherein the integration approximation methods include sparse selection of points methods.

57. The computer program product of claim 56 wherein the sparse selection of points method is chosen from the group consisting of Guassian quadratures, Low discrepancy deterministic sequences, Halton points, and Sobol points.

58. A method for providing the price of each BIC within an original BIC-basis of one or more related BICs, where each BIC of said original BIC-basis is considered an element of said BIC-basis, and where each BIC pertains to any number of underlyings, in a single or multi-period trading framework, for any notional amount  $n$ , said method comprising:

- a. identifying any subsequent BIC-basis having elements with premium payment amounts derived from the premium payment amounts of said original BIC-basis of one or more related BICs; and,
- b. providing the premium payment amounts of each element of said subsequent

BIC-basis using a functional formula.

59. The method of claim 58 wherein said subsequent BIC-basis is said original BIC-basis of one or more BICs.

60. The method of claim 58, wherein at least one of said underlyings relates to the credit risk of a stakeholder to any of said one or more BICs.

61. The method of claim 58 wherein said subsequent BIC-basis is different from but equivalent to said original BIC-basis.

62. The method of claim 58 wherein step b) comprises using a linear operation to transform said price of said subsequent family of BICs into the price of said original BIC-basis.

63. The method of claim 62 wherein the linear operation is a multiplication by the matrix T, the original BIC-basis is has a final payoff on the EOFBICP format and the equivalent family has a final payoff on the EADFBICP format.

64. The method of claim 58 wherein said functional formula of step b depends upon at least:

- the notional amount of each BIC within said original BIC-basis, and
- a distinctive reference to associate said notional amount to its corresponding BIC.

65. The method of claim 64 further comprising establishing the price associated with the notional amount of each BIC comprising the steps of:

- a. providing a first unit notional price for each of said BICs; and,
- b. providing a scaling density function for each of said BICs, where said scaling

density function is operative with said first unit notional price of said BICs to reflect the n-notional price of said BIC, and where said n-notional price of said BIC reflects the supply and demand for said BIC.

66. The method of claim 65 wherein said first unit notional price of said BICs is expressed in the form of a functional formula.

67. The method of claim 65 wherein said first unit notional price is expressed as a stochastic process.

68. The method of claim 67 further comprising transforming said stochastic process into conditional probabilities of the underlyings using a discretization scheme.

69. The method as in claim 68 where the discretization scheme is an expansion method or a Euler scheme.

70. The method as in claim 69 wherein the expansion method is a Hermite expansion.

71. A system for providing the price of each BIC within an original BIC-basis of one or more related BICs, where each BIC of said original BIC-basis is considered an element of said BIC-basis, and where each BIC pertains to any number of underlyings, in a single or multi-period trading framework, for any notional amount n, said system comprising:

- a. means for identifying any subsequent BIC-basis having elements with premium payment amounts derived from the premium payment amounts of said original BIC-basis of one or more related BICs; and,
- b. means for providing the premium payment amounts of each element of said

subsequent BIC-basis using a functional formula.

72. The system of claim 71 wherein said subsequent BIC-basis is said original BIC-basis of one or more BICs.

73. The system of claim 71, wherein at least one of said underlyings relates to the credit risk of a stakeholder to any of said one or more BICs.

74. The system of claim 71 wherein said subsequent BIC-basis is different from but equivalent to said original BIC-basis.

75. The system of claim 71 wherein step b) comprises using a linear operation to transform said price of said subsequent family of BICs into the price of said original BIC-basis.

76. The system of claim 75 wherein the linear operation is a multiplication by the matrix T, the original BIC-basis is has a final payoff on the EOFBICP format and the equivalent family has a final payoff on the EADFBICP format.

77. The system of claim 71 wherein the functional formula providing the premium payment amounts of each element of said subsequent BIC-basis depends upon at least:

- the notional amount of each BIC within said original BIC-basis, and
- a distinctive reference to associate said notional amount to its corresponding BIC.

78. The system of claim 77 further comprising means for establishing the price associated with the notional amount of each BIC comprising:

- a. means for providing a first unit notional price for each of said BICs; and,

b. means for providing a scaling density function ( weighted ) for each of said BICs, where said scaling density function is operative with said first unit notional price of said BIC to reflect the n-notional price of said BIC, and where said n-notional price of said BIC reflects the supply and demand for said BIC.

79. The system of claim 78 wherein said first unit notional price of said BICs is expressed in the form of a functional formula.

80. The system of claim 78 wherein said first unit notional price is expressed as a stochastic process.

81. The system of claim 80 further comprising means for transforming said stochastic process into conditional probabilities of the underlyings using a discretization scheme.

82. The system as in claim 81 wherein the discretization scheme is an expansion method or a Euler scheme.

83. The system as in claim 82 wherein the expansion method is a Hermite expansion.

84. A computer program product for providing the price of each BIC within an original BIC-basis of one or more related BICs, where each BIC of said original BIC-basis is considered an element of said BIC-basis, and where each BIC pertains to any number of underlyings, in a single or multi-period trading framework, for any notional amount n, said computer program product comprising a computer usable medium having computer-readable code means embodied in said medium, said computer-readable code means comprising computer readable code means for:

- a. identifying any subsequent BIC-basis having elements with premium payment amounts derived from the premium payment amounts of said original BIC-basis of one or more related BICs; and,
- b. providing the premium payment amounts of each element of said subsequent BIC-basis using a functional formula.

85. The computer program product of claim 84 wherein said subsequent BIC-basis is said original BIC-basis of one or more BICs.

86. The computer program product of claim 84, wherein at least one of said underlyings relates to the credit risk of a stakeholder to any of said one or more BICs.

87. The computer program product of claim 84 wherein said subsequent BIC-basis is different from but equivalent to said original BIC-basis.

88. The computer program product of claim 84 wherein step b) comprises using a linear operation to transform said price of said subsequent family of BICs into the price of said original BIC-basis.

89. The computer program product of claim 88 wherein the linear operation is a multiplication with by the matrix T, the original BIC-basis is has a final payoff on the EOFBICP format and the equivalent family has a final payoff on the EADFBICP format.

90. The computer program product of claim 84 wherein the functional formula of step b depends upon at least:

- the notional amount of each BIC within said original BIC-basis, and
- a distinctive reference to associate said notional amount to its corresponding BIC.

91. The computer program product of claim 90 further comprising computer readable code means for establishing the price associated with the notional amount of each BIC comprising:

a. computer readable code means for providing a first unit notional price for each of said BICs; and,

b. computer readable code means for providing a scaling density function for each of said BICs, where said scaling density function is operative with said first unit notional price of said BICs to reflect the n-notional price of said BIC, and where said n-notional price of said BIC reflects the supply and demand for said BIC.

92. The computer program product of claim 91 wherein said first unit notional price of said BICs is expressed in the form of a functional formula.

93. The computer program product of claim 91 wherein said first unit notional price is expressed as a stochastic process.

94. The computer program product of claim 93 further comprising computer readable code means for transforming said stochastic process into conditional probabilities of the underlyings using a discretization scheme.

95. The computer program product as in claim 94 where the discretization scheme is an expansion scheme or a Euler scheme.

96. The computer program product as in claim 95 wherein the expansion scheme is a Hermite expansion.

97. A method for pricing a derivatives contract on any number of underlyings, in



a single or multi-period trading framework, for any notional amount, comprising:

- a. enabling a stakeholder to provide a description of said derivatives contract in a functional format;
  - b. enabling said stakeholder to provide a price for one or more basis instruments;
- and,
- c. providing a price for said derivatives contract responsive to steps a and b.

98. The method of claim 97 wherein the price of said derivatives contract is provided as real numbers, couples of real numbers or matrices representative of prices for multiple possible future states or payout payment functions.

99. The method of claim 97 wherein said functional format of the description of said derivatives contract depends on the underlyings but not on the underlyings together with parameters representative of value choices available to any stakeholder, whether buyer or seller.

100. The method of claim 97 wherein said functional format for the description of said derivatives contract depends on the underlyings and also on parameters representative of value choices available to any stakeholder, whether buyer or seller.

101. The method of claim 100 further comprising transforming said functional format of the description of said derivatives contract into a second functional format that depends on the underlyings but not on the underlyings together with parameters representative of value choices available to any stakeholder, whether buyer or seller.

102. The method of claims 97, 100 or 101 further comprising performing an optimized decomposition algorithm on said functional format of the

description of said derivatives contract and on the prices of said basis instruments to yield the price of said derivatives contract.

103. A system for pricing a derivatives contract on any number of underlyings, in a single or multi-period trading framework, for any notional amount, comprising:

- a. a module for inputting a description of said derivatives contract in a functional format;
- b. a module for inputting prices for one or more basis instruments; and,
- c. a module for returning a price for said derivatives contract responsive to said description of said derivatives contract in said functional format and the prices of said one or more basis instruments.

104. The system of claim 103 wherein the functional format of the description of said derivatives contract depends on the underlyings but not on the underlyings together with parameters representative of value choices available to any stakeholder, whether buyer or seller.

105. The system of claim 103 wherein the price of said derivatives contract is provided as real numbers, couples of real numbers or matrices representative of prices for multiple possible future states or payout payment functions.

106. The system of claim 103. wherein said functional format for the description of said derivatives contract depends on the underlyings and also on parameters representative of value choices available to any stakeholder, whether buyer or seller.

107. The system of claim 106 further comprising means for transforming said functional format of the description of said derivatives contract into a second functional format that depends on the underlyings but not on the underlyings to-

gether with parameters representative of value choices available to any stakeholder, whether buyer or seller.

108. The system of claim 103, 106 or 107 further comprising a processing system for performing an optimized decomposition algorithm on said functional format of the description of said derivatives contract and on the prices of said basis instruments to yield the price of said derivatives contract.

109. A computer program product for pricing a derivatives contract on any number of underlyings, in a single or multi-period trading framework, for any notional amount, comprising:

a. a computer usable medium having computer-readable code means embodied in said medium, said computer-readable code means comprising:

-computer readable code means for enabling a stakeholder to provide a description of said derivatives contract in a functional format;

-computer readable code means for enabling the stakeholder to provide a price for one or more basis instrument; and,

-computer readable code means for providing a price for said derivatives contract responsive to the description of said derivatives contract in said functional format and the prices of said one or more basis instruments.

110. The computer program product of claim 109 wherein said functional format of the description of said derivatives contract depends on the underlyings but not on the underlyings together with parameters representative of value choices available to any stakeholder, whether buyer or seller.

111. The computer program product of claim 109 wherein the price of said derivatives contract is provided as real numbers, couples of real numbers or matrices

representative of prices for multiple possible future states or payout payment functions.

112. The computer program product of claim 109. wherein said functional format for the description of said derivatives contract depends on the underlyings and also on parameters representative of value choices available to any stakeholder, whether buyer or seller.

113. The computer program product of claim 112 further comprising computer readable code means for transforming said functional format of the description of said derivatives contract into a second functional format that depends on the underlyings but not on the underlyings together with parameters representative of value choices available to any stakeholder, whether buyer or seller.

114. The computer program product of claim 109, 112 or 113 further comprising computer readable code means for performing an optimized decomposition algorithm on said functional format of the description of said derivatives contract and on the prices of said basis instruments to yield the price of said derivatives contract.

115. A method for a first stakeholder in a financial transaction to incorporate credit risk sensitivity in the estimation of the value of a counterpartys liability, said method comprising:

a. creating a credit risk underlying whose value at any given time is equal to the percentage of the liability said counterparty honors at said given time, and where said percentage depends on

the notional amount of said counterpartys liability at said given time, said first stakeholders identity and said counterpartys identity; and,

b. multiplying the value of the liability said of counterparty at said given time by

said credit risk underlying to obtain a result known as the value of the credit risk adjusted liability at said given time.

116. The method of claim 115 wherein the credit risk underlying at any intermediate future time and the ratio of the credit risk underlying at any future time to the credit risk underlying at said intermediate future time are two independent random variables.

117. The method of claim 115 wherein the value of the credit risk underlying at any future time is the product of the value of the credit risk underlying at any intermediate future time and a random variable varying between zero and one.

118. The method of claim 117 wherein the random variable follows a beta distribution, where said beta distribution can be represented by various relevant parameters.

119. The method of claim 118 wherein the parameters associated with said beta distribution depend upon the realized value of other inputs, where said other inputs may include different underlyings.

120. The method of any of claims 115 - 6 further comprising pricing a derivatives contract inclusive of credit risk comprising inputting as the liability the payout payment function of said derivatives contract, and returning as payout payment function a new credit risky liability.

121. A method for calculating the credit risk limit of a given counterparty by setting a maximum responsive to the difference between the value of the counterparty liability not inclusive of credit risk and the value of said liability inclusive of credit risk

122. A method for determining a margin amount due by a stakeholder on a derivatives contract comprising:

- a. determining a first payment amount by said stakeholder, where said first payment amount is viewed from the position of said stakeholders counterparty, when said counterparty is anticipating a default by said stakeholder;
- b. determining a second payment amount by said stakeholder, where said second payment amount is viewed from the position of said stakeholders counterparty when said counterparty is not contemplating a default by said stakeholder; and,
- c. calculating said margin responsive to said first payment amount and said second payment amount.

123. The method of claim 122, where said stakeholder is a buyer and said first payment amount and said second payment amount are premium payment amounts.

124. The method of claim 122 where said stakeholder is a seller and said first payment amount and said second payment amount are payout payment amounts.

125. A system for a first stakeholder in a financial transaction to incorporate credit risk sensitivity in the estimation of the value of a counterpartys liability, said system comprising:

- a. means for creating a credit risk underlying whose value at any given time is equal to the percentage of the liability said counterparty honors at said given time, and where said percentage depends on  
the notional amount of said counterpartys liability at said given time, said first stakeholders identity and said counterpartys identity; and,
- b. means for multiplying the value of the liability said counterparty can honor at said given time by said credit risk underlying to obtain a result known as the credit risk adjusted liability at said given time.

126. The system of claim 125 wherein the credit risk underlying at any intermediate future time and the ratio of the credit risk underlying at any future time to the credit risk underlying at said intermediate future time are two independent random variables.

127. The system of claim 125 wherein the value of the credit risk underlying at any future time is the product of the value of the credit risk underlying at any intermediate future time and a random variable varying between zero and one.

128. The system of claim 127 wherein the random variable follows a beta distribution, where said beta distribution can be represented by various relevant parameters.

129. The system of claim 128 wherein the parameters associated with said beta distribution depend upon the realized value of other inputs, where said other inputs may include different underlyings.

130. The system of any of claims 125 - 17 further comprising means for pricing a derivatives contract inclusive of credit risk comprising means for inputting as the liability the payout payment function of said derivatives contract, and means for returning as payout payment function a new credit risky liability.

131. A system for calculating the credit risk limit of a given counterparty comprising means for setting a maxim responsive to the difference between the value of the counterparty liability not inclusive of credit risk and the value of said liability inclusive of credit risk

132. A system for determining a margin amount due by a stakeholder on a derivatives contract comprising:

- a. means for determining a first payment amount by said stakeholder, where said first payment amount is viewed from the position of said stakeholders counterparty, when said counterparty is anticipating a default by said stakeholder;
- b. means for determining a second payment amount by said stakeholder, where said second payment amount is viewed from the position of said stakeholders counterparty when said counterparty is not contemplating a default by said stakeholder; and,
- c. means for calculating said margin responsive to said first payment amount and said second payment amount.

133. The system of claim 132, where said stakeholder is a buyer and said first payment amount and said second payment amount are premium payment amounts.

134. The system of claim 132 where said stakeholder is a seller and said first payment amount and said second payment amount are payout payment amounts.

135. A computer program product for a first stakeholder in a financial transaction to incorporate credit risk sensitivity in the estimation of the value of a counterpartys liability, said computer program product comprising a computer usable medium having computer readable code means embodied in said medium, said computer readable code means comprising:

- a. computer readable code means for creating a credit risk underlying whose value at any given time is equal to the percentage of the liability said counterparty honors at said given time, and where said percentage depends on

the notional amount of said counterpartys liability at said given time, said first stakeholders identity and said counterpartys identity; and,

- b. computer readable code means for multiplying the value of the liability said



counterparty can honor at said given time by said credit risk underlying to obtain a result known as the credit risk adjusted liability at said given time.

136. The computer program product of claim 135 wherein the credit risk underlying at any intermediate future time and the ratio of the credit risk underlying at any future time to the credit risk underlying at said intermediate future time are two independent random variables.

137. The computer program product of claim 135 wherein the value of the credit risk underlying at any future time is the product of the value of the credit risk underlying at any intermediate future time and a random variable varying between zero and one.

138. The computer program product of claim 137 wherein the random variable follows a beta distribution, where said beta distribution can be represented by various relevant parameters.

139. The computer program product of claim 138 wherein the parameters associated with said beta distribution depend upon the realized value of other inputs, where said other inputs may include different underlyings.

140. The computer program product of any of claims 135 - 27 further comprising computer readable code means for pricing a derivatives contract inclusive of credit risk comprising computer readable code means for inputting as the liability the payout payment function of said derivatives contract, and computer readable code means for returning as payout payment function a new credit risky liability.

141. A computer program product for calculating the credit risk limit of a given

counterparty comprising computer readable code means for setting a maxim responsive to the difference between the value of the counterparty liability not inclusive of credit risk and the value of said liability inclusive of credit risk

142. A computer program product for determining a margin amount due by a stakeholder on a derivatives contract comprising a computer usable medium having computer readable code means embodied in said medium, said computer readable code means comprising:

a. computer readable code means for determining a first payment amount by said stakeholder, where said first payment amount is viewed from the position of said stakeholders counterparty, when said counterparty is anticipating a default by said stakeholder;

b. computer readable code means for determining a second payment amount by said stakeholder, where said second payment amount is viewed from the position of said stakeholders counterparty when said counterparty is not contemplating a default by said stakeholder; and,

c. computer readable code means for calculating said margin responsive to said first payment amount and said second payment amount.

143. The computer program product of claim 142, where said stakeholder is a buyer and said first payment amount and said second payment amount are premium payment amounts.

144. The computer program product of claim 142 where said stakeholder is a seller and said first payment amount and said second payment amount are payout payment amounts.

145. A method for incorporating supply and demand sensitivities in BICs premium payment amounts, in units of base currency comprising inputting a scaling density function relating the dependence of the first unit notional premium amount of said BICs to the premium amount for any other notional amount of said BICs.

146. The method of claim 145 wherein said scaling density function is responsive to inventory amounts of said BICS held by one or more sellers or one or more buyers.

147. The method of claim 145 wherein said scaling density function is responsive to the market price of said BICs.

148. The method of claim 145 wherein said scaling density function is selected to prevent arbitrage opportunities.

149. The method of claim 146 wherein scaling density function is provided implicitly through the determination of a weighting function.

150. The method of claim 149 for implicitly providing said scaling density function comprising:

- a. inputting a weighting function;
- b. providing EADBICs premium payment amounts; and,
- c. transforming said EADBICs premium payment amounts into premium payment amounts of elements of the applicable BICs- basis.

151. The method of claim 150 wherein providing said EADBICs premium payment amounts comprises:

- a. inputting a weighting function; and,
- b. transforming said weighting function into EADBICs premium payment amounts.

152. A method for automatically quoting BICs prices in a trading or exchange system comprising inputting functions representative of BICs prices responsive to offer and demand.

153. The method of claim 152 wherein said functions representative of BICs prices are further responsive to BICs inventory.

154. The method of claim 152 wherein said functions representative of BICs prices are further responsive to prices quoted in the market for said BICs.

155. The method of claim 152 wherein said functions representative of BICs prices are further responsive to counterparty credit risk

156. A system for incorporating supply and demand sensitivities in BICs premium payment amounts, in units of base currency comprising means for inputting a scaling density function relating the dependence of the first unit notional premium amount of said BICs to the premium amount for any other notional amount of said BICs.

157. The system of claim 156 wherein said scaling density function is responsive to inventory amounts of said BICs held by one or more sellers or one or more buyers.

158. The system of claim 156 wherein said scaling density function is responsive to the market price of said BICs.

159. The system of claim 156 wherein said scaling density function is selected to prevent arbitrage opportunities.

160. The system of claim 157 wherein said scaling density function is provided implicitly through the determination of a weighting function.

161. The system of claim 160 for implicitly providing said scaling density function comprising:

- a. means for inputting a weighting function;
- b. means for providing EADBICs premium payment amounts; and,
- c. means for transforming said EADBICs premium payment amounts into premium payment amounts of elements of the applicable BICs-basis.

162. The system of claim 161 wherein means for providing said EADBICs premium payment amounts comprises:

- a. means for inputting a weighting function; and,
- b. means for transforming said weighting function into EADBICs premium payment amounts.

163. A system for automatically quoting BICs prices in a trading or exchange system comprising means for inputting functions representative of BICs prices responsive to offer and demand.

164. The system of claim 163 wherein said functions representative of BICs prices are further responsive to BICs inventory.

165. The system of claim 163 wherein said functions representative of BICs prices are further responsive to prices quoted in the market for said BICs.

166. The system of claim 163 wherein said functions representative of BICs prices

are further responsive to counterparty credit risk

167. A computer program product for incorporating supply and demand sensitivities in BICs premium payment amounts, in units of base currency comprising a computer usable medium having computer-readable code means embodied in said medium, said computer-readable code means comprising computer readable code means for inputting a scaling density function relating the dependence of the first unit notional premium amount of said BICs to the premium amount for any other notional amount of said BICs.

168. The computer program product of claim 167 wherein said scaling density function is responsive to inventory amounts of said BICs held by one or more sellers or one or more buyers.

169. The computer program product of claim 167 wherein said scaling density function is responsive to the market price of said BICs.

170. The computer program product of claim 167 wherein said scaling density function is selected to prevent arbitrage opportunities.

171. The computer program product of claim 168 wherein scaling density function is provided implicitly through the determination of a weighting function.

172. The computer program product of claim 171 for implicitly providing said scaling density function comprising:

- a. computer readable code means for inputting a weighting function;
- b. computer readable code means for providing EADBICs premium payment amounts; and,

c. computer readable code means for transforming said EADBICs premium payment amounts into premium payment amounts of elements of the applicable BICs-basis.

173. The computer program product of claim 172 wherein computer readable code means for providing said EADBICs premium payment amounts comprises:

- a. computer readable code means for inputting a weighting function; and,
- b. computer readable code means for transforming said weighting function into EADBICs premium payment amounts.

174. A computer program product for automatically quoting BICs prices in a trading or exchange computer program product comprising a computer usable medium having computer-readable code means embodied in said medium, said computer-readable code means comprising computer readable code means for inputting functions representative of BIC prices responsive to offer and demand.

175. The computer program product of claim 174 wherein said functions representative of BIC prices are further responsive to BICs inventory.

176. The computer program product of claim 174 wherein said functions representative of BICs prices are further responsive to prices quoted in the market for said BICs.

177. The computer program product of claim 174 wherein said functions representative of BICs prices are further responsive to counterparty credit risk

178. A method for mediating trading in BICs comprising:

- a. establishing a BICs-basis;

- b. establishing a network to facilitate interaction between stakeholders under the supervision of a trading system management authority;
  - c. causing said network to communicate with said stakeholders to enable a determination of trading prices for BICs trades;
  - d. identifying relevant derivatives contracts;
  - e. decomposing said relevant derivatives contracts to create a portfolio of BICs;
- and,
- f. finalizing a transaction in said portfolio of BICs.

179. The method of claim 178 further comprising causing said stakeholders to provide information to enable a determination of trading prices for subsequent derivatives contract trades.

180. The method of claim 178 further comprising finalizing a transaction in said derivatives contract.

181. The method of claim 178 wherein one or more of said stakeholders is: a derivatives contracts price taker, a derivatives contracts buyer, a derivatives contracts seller, a BICs market maker, BICs buyer, or a BICs seller.

182. The method of claim 178 further comprising enabling one or more of said stakeholders to quote bid prices on said BICs.

183. The method of claim 178 further comprising enabling one or more of said stakeholders to quote offer prices on said BICs.

184. The method of claim 178 further comprising updating each stakeholders books after each transaction is finalized.



185. The method of claim 178 further comprising enabling any of said stakeholders to send information on the derivatives product of interest as a DCWBSOF functional description.

186. The method of claim 178 further comprising enabling any of said stakeholders to send information on the derivatives product of interest as a DCWOF functional description.

187. The method of claim 178 further comprising enabling stakeholders to send trade orders and to receive order confirmations on orders placed.

188. The method of claim 178 further comprising enabling estimation of any of said stakeholders credit risk.

189. The method of claim 178 further comprising facilitating hedging against any of said stakeholders credit risk.

190. The method of claim 178 further comprising approximating an ultimate price for an initial stakeholder to either buy or sell a derivatives contract, where said derivatives contract is associated with a selected set of replicating BICs, and where fraction(s) of said replicating BICs will be traded.

191. The method of claim 190 further comprising:

- a. identifying one or more stakeholders having quotes on fractions of said replicating BICs of said derivatives contract;
- b. designating any stakeholder from step a) as a trading party;
- c. determining the fraction(s) of said replicating BICs to be traded with said des-

ignated stakeholder of step b;

d. entering a transaction between said designated stakeholder and said initial stakeholder for each one of said fraction(s) of replicating BICs at its respective price(s) and storing said respective price(s);

e. taking the sum of all the stored respective prices of said fractions of replicating BICs as the ultimate price.

192. The method of claim 190 wherein said ultimate price is the cheapest price responsive to a buying interest from a derivatives contract buying stakeholder.

193. The method of claim 190 wherein said ultimate price is the most expensive price responsive to a selling interest from a derivatives contract selling stakeholder.

194. The method of claim 190 wherein the error associated with approximating said ultimate price is bounded by a known quantity.

195. The method of claim 190 further comprising adding a premium to said ultimate price.

196. The method of claim 195 wherein said premium may include margins for errors associated with determining said fractions.

197. The method of claim 195 wherein said premium may include margins for said trading system management authority.

198. A system for mediating trading in BICs comprising:

a. means for establishing a BICs-basis;

b. means for establishing a network to facilitate interaction between stakeholders

under the supervision of a trading system management authority;

- c. means for causing said network to communicate with said stakeholders to enable a determination of trading prices for BICs trades;
- d. means for identifying relevant derivatives contracts;
- e. means for decomposing said relevant derivatives contracts to create a portfolio of BICs; and,
- f. means for finalizing a transaction in said portfolio of BICs.

199. The system of claim 198 further comprising means for causing said stakeholders to provide information to enable a determination of trading prices for subsequent derivatives contract trades.

200. The system of claim 198 further comprising means for finalizing a transaction in said derivatives contract.

201. The system of claim 198 wherein one or more of said stakeholders is: a derivatives contracts price taker, a derivatives contracts buyer, a derivatives contracts seller, a BICs market maker, BICs buyer, or a BICs seller.

202. The system of claim 198 further comprising means for enabling one or more of said stakeholders to quote bid prices on said BICs.

203. The system of claim 198 further comprising means for enabling one or more of said stakeholders to quote offer prices on said BICs.

204. The system of claim 198 further comprising means for updating each stakeholders books after each transaction is finalized.

205. The system of claim 198 further comprising means for enabling any of said stakeholders to send information on the derivatives product of interest as a DCWB-SOF functional description.

206. The system of claim 198 further comprising means for enabling any of said stakeholders to send information on the derivatives product of interest as a DCWOF functional description.

207. The system of claim 198 further comprising means for enabling stakeholders to send trade orders and to receive order confirmations on orders placed.

208. The system of claim 198 further comprising means for enabling estimation of any of said stakeholders credit risk.

209. The system of claim 198 further comprising means for facilitating hedging against any of said stakeholders credit risk.

210. The system of claim 198 further comprising means for approximating an ultimate price for an initial stakeholder to either buy or sell a derivatives contract, where said derivatives contract is associated with a selected set of replicating BICs, and where fraction(s) of said replicating BICs will be traded.

211. The system of claim 210 further comprising:

- a. means for identifying one or more stakeholders having quotes on fractions of said replicating BICs of said derivatives contract;
- b. means for designating any stakeholder from step a) as a trading party;
- c. means for determining the fraction(s) of said replicating BICs to be traded with said designated stakeholder of step b;

d. means for entering a transaction between said designated stakeholder and said initial stakeholder for each one of said fraction(s) of replicating BICs at its respective price(s) and storing said respective price(s); and,

e. means for taking the sum of all the stored respective prices of said fractions of replicating BICs as the ultimate price.

212. The system of claim 210 wherein said ultimate price is the cheapest price responsive to a buying interest from a derivatives contract buying stakeholder.

213. The system of claim 210 wherein said ultimate price is the most expensive price responsive to a selling interest from a derivatives contract selling stakeholder.

214. The system of claim 210 wherein the error associated with approximating said ultimate price is bounded by a known quantity.

215. The system of claim 210 further comprising means for adding a premium to said ultimate price.

216. The system of claim 215 wherein said premium may include margins for errors associated with determining said fractions.

217. The system of claim 215 wherein said premium may include margins for said trading system management authority.

218. A computer program product for mediating trading in BICs comprising a computer usable medium with computer readable code means comprising:

- a. computer readable code means for establishing a BICs-basis;
- b. computer readable code means for establishing a network to facilitate interaction

between stakeholders under the supervision of a trading system management authority;

- c. computer readable code means for causing said network to communicate with said stakeholders to enable a determination of trading prices for BICs trades;
- d. computer readable code means for identifying relevant derivatives contracts;
- e. computer readable code means for decomposing said relevant derivatives contracts to create a portfolio of BICs; and,
- f. computer readable code means for finalizing a transaction in said portfolio of BICs.

219. The computer program product of claim 218 further comprising computer readable code means for causing said stakeholders to provide information to enable a determination of trading prices for subsequent derivatives contract trades.

220. The computer program product of claim 218 further comprising computer readable code means for finalizing a transaction in said derivatives contract.

221. The computer program product of claim 218 wherein one or more of said stakeholders is: a derivatives contracts price taker, a derivatives contracts buyer, a derivatives contracts seller, a BICs market maker, BICs buyer, or a BICs seller.

222. The computer program product of claim 218 further comprising computer readable code means for enabling one or more of said stakeholders to quote bid prices on said BICs.

223. The computer program product of claim 218 further comprising computer readable code means for enabling one or more of said stakeholders to quote offer prices on said BICs.

224. The computer program product of claim 218 further comprising computer readable code means for updating each stakeholders books after each transaction is finalized.

225. The computer program product of claim 218 further comprising computer readable code means for enabling any of said stakeholders to send information on the derivatives product of interest as a DCWBSOF functional description.

226. The computer program product of claim 218 further comprising computer readable code means for enabling any of said stakeholders to send information on the derivatives product of interest as a DCWOF functional description.

227. The computer program product of claim 218 further comprising computer readable code means for enabling stakeholders to send trade orders and to receive order confirmations on orders placed.

228. The computer program product of claim 218 further comprising computer readable code means for enabling estimation of any of said stakeholders credit risk.

229. The computer program product of claim 218 further comprising computer readable code means for facilitating hedging against any of said stakeholders credit risk.

230. The computer program product of claim 218 further comprising computer readable code means for approximating an ultimate price for an initial stakeholder to either buy or sell a derivatives contract, where said derivatives contract is associated with a selected set of replicating BICs, and where fraction(s) of said replicating BICs

will be traded.

231. The computer program product of claim 230 further comprising:

- a. computer readable code means for identifying one or more stakeholders having quotes on fractions of said replicating BICs of said derivatives contract;
- b. computer readable code means for designating any stakeholder from step a) as a trading party;
- c. computer readable code means for determining the fraction(s) of said replicating BICs to be traded with said designated stakeholder of step b;
- d. computer readable code means for entering a transaction between said designated stakeholder and said initial stakeholder for each one of said fraction(s) of replicating BICs at its respective price(s) and storing said respective price(s); and,
- e. computer readable code means for taking the sum of all the stored respective prices of said fractions of replicating BICs as the ultimate price.

232. The computer program product of claim 230 wherein said ultimate price is the cheapest price responsive to a buying interest from a derivatives contract buying stakeholder.

233. The computer program product of claim 230 wherein said ultimate price is the most expensive price responsive to a selling interest from a derivatives contract selling stakeholder.

234. The computer program product of claim 230 wherein the error associated with approximating said ultimate price is bounded by a known quantity.

235. The computer program product of claim 230 further comprising computer readable code means for adding a premium to said ultimate price.



236. The computer program product of claim 235 wherein said premium may include margins for errors associated with determining said fractions.

237. The computer program product of claim 235 wherein said premium may include margins for said trading system management authority.

238. A method for managing risk on a portfolio of financial derivatives contracts comprising:

- a. maintaining an inventory of said derivatives contracts, where said inventory of said derivatives contracts is maintained in BICs units;
- b. assessing the risk on said inventory of financial derivatives contracts responsive to said inventory; and
- c. re-allocating inventory responsive to assessing the risk on said portfolio.

239. The method of claim 238 further comprising valuing the inventory of said derivatives contracts, decomposed in basis instruments units, maintained in BICs units responsive to said live market data.

240. The method of claim 238 further comprising maintaining information regarding current, historical and prospective derivatives contract portfolio positions.

241. The method of claim 238 wherein assessing the risk on said portfolio comprises:

- considering potential portfolio reallocations, and
- conducting a valuation analysis responsive to said potential portfolio reallocations.

242. The method of claim 238 wherein assessing the risk on said portfolio comprises conducting back testing analyses.

243. The method of claim 238 further comprising:  
-establishing targeted overall portfolio profiles, and  
-designing additional derivatives contracts corresponding to targeted overall portfolio profiles.

244. The method of claim 243 further comprising acquiring or selling said additional designed derivatives contracts to achieve said targeted overall portfolio profile.

245. The method of any of claims 238, 239, 240, 241, 242, 243 or 244 further comprising providing interfacing capability to enable a stakeholder to input requests and the ability to view the results of those requests.

246. The method of claim 238 further comprising obtaining information from a live market data source on the current premium payment amounts of market BICs.

247. The method of claim 246 further comprising generating value-at-risk numbers by combining traded BICs to obtain state probabilities and profits or losses associated with each state.

248. A system for managing risk on a portfolio of financial derivatives contracts comprising:

- a. means for maintaining an inventory of said derivatives contracts, where said inventory of said derivatives contracts is maintained in BICs units;
- b. means for assessing the risk on said inventory of financial derivatives contracts responsive to said inventory; and

c. means for re-allocating inventory responsive to means for assessing the risk on said portfolio.

249. The system of claim 248 further comprising means for valuing the inventory of said derivatives contracts, decomposed in basis instruments units, maintained in BICs units responsive to said live market data.

250. The system of claim 248 further comprising means for maintaining information regarding current, historical and prospective derivatives contract portfolio positions.

251. The system of claim 248 wherein means for assessing the risk on said portfolio comprises:

- means for considering potential portfolio reallocations, and
- means for conducting a valuation analysis responsive to said potential portfolio reallocations.

252. The system of claim 248 wherein means for assessing the risk on said portfolio comprises means for conducting back testing analyses.

253. The system of claim 248 further comprising:

- means for establishing targeted overall portfolio profiles, and
- means for designing additional derivatives contracts corresponding to targeted overall portfolio profiles.

254. The system of claim 253 further comprising means for acquiring or selling said additional designed derivatives contracts to achieve said targeted overall portfolio profile.

255. The system of any of claims 248, 249, 250, 251, 252, 253 or 254 further comprising means for interfacing to enable a stakeholder to input requests and means for viewing the results of those requests.

256. The system of claim 248 further comprising means for obtaining information from a live market data source on the current premium payment amounts of market BICs.

257. The system of claim 256 further comprising means for generating value-at-risk numbers through means for combining traded BICs to obtain state probabilities and profits or losses associated with each state.ociated with each state.

258. A computer program product for managing risk on a portfolio of financial derivatives contracts, comprising:

a computer usable medium having computer-readable code means embodied in said medium, said computer-readable code means comprising:

computer readable code means for

a. maintaining an inventory of said derivatives contracts, where said inventory of said derivatives contracts is maintained in BICs units;

b. assessing the risk on said inventory of financial derivatives contracts responsive to said inventory; and

c. re-allocating inventory responsive to assessing the risk on said portfolio.

259. The computer program product of claim 258 further comprising computer readable code means for valuing the inventory of said derivatives contracts, decomposed in basis instruments units, maintained in BICs units responsive to said live market data.

260. The computer program product of claim 258 further comprising computer readable code means for maintaining information regarding current, historical and prospective derivatives contract portfolio positions.

261. The computer program product of claim 258 wherein assessing the risk on said portfolio comprises:

- computer readable code means for considering potential portfolio reallocations, and

- computer readable code means for conducting a valuation analysis responsive to said potential portfolio reallocations.

262. The computer program product of claim 258 wherein assessing the risk on said portfolio comprises computer readable code means for conducting back testing analyses.

263. The computer program product of claim 258 further comprising:  
computer readable code means for establishing targeted overall portfolio profiles, and  
computer readable code means for designing additional derivatives contracts corresponding to targeted overall portfolio profiles.

264. The computer program product of claim 263 further comprising computer readable code means for acquiring or selling said additional designed derivatives contracts to achieve said targeted overall portfolio profile.

265. The computer program product of any of claims 258, 259, 260, 261, 262, 263 or 264 further comprising computer readable code means for providing interfacing capability to enable a stakeholder to input requests and the ability to view the results

of those requests.

**266.** The computer program product of claim 258 further comprising computer readable code means for obtaining information from a live market data source on the current premium payment amounts of market BICs.

**267.** The computer program product of claim 266 further comprising computer readable code means for generating value-at-risk numbers by combining traded BICs to obtain state probabilities and profits or losses associated with each state.

**268.** A method of accounting for derivatives contracts, in compliance with FAS 133 or IAS 39, to reduce volatility in periodic earnings, where said derivatives contracts are used to hedge against fluctuations in the value of a held asset, comprising:

- a. determining a BIC basis;
- b. determining a target value associated with the value of said held asset;
- c. establishing a residual contract, where said residual contract is a portfolio containing:
  - a long position in said derivatives contract,
  - a long position in said held asset if said held asset is a long position held, and,
  - a short cash position with value equal to said target value;
- d. decomposing said residual contract in said BIC basis; and,
- e. reporting said residual contract in a net profit or loss as the non-hedging part of said derivatives contract.

**269.** The method of claim 268 wherein in said residual contract the held asset position in the portfolio is short if the held asset is a short position.

**270.** A system for accounting for derivatives contracts, in compliance with FAS

133 or IAS 39, to reduce volatility in periodic earnings, where said derivatives contracts are used to hedge against fluctuations in the value of a held asset, comprising:

- a. means for determining a BIC basis;
- b. means for determining a target value associated with the value of said held asset;
- c. means for establishing a residual contract, where said residual contract is a portfolio containing:

- a long position in said derivatives contract,
- a long position in said held asset if said held asset is a long position held, and,
- a short cash position with value equal to said target value;
- d. decomposing said residual contract in said BIC basis; and,
- e. reporting said residual contract in a net profit or loss as the non-hedging part of said derivatives contract.

271. The system of claim 270 wherein in said residual contract the held asset position in the portfolio is short if the held asset is a short position.

272. A computer program product to account for derivatives contracts, in compliance with FAS 133 or IAS 39, to reduce volatility in periodic earnings, where said derivatives contracts are used to hedge against fluctuations in the value of a held asset, comprising:

a computer usable medium having computer-readable code means embodied in said medium, said computer readable code means comprising computer-readable code means for:

- a. determining a BIC basis;
  - b. determining a target value associated with the value of said held asset;
  - c. establishing a residual contract, where said residual contract is a portfolio containing:
- a long position in said derivatives contract,

- a long position in said held asset if said held asset is a long position held, and,
- a short cash position with value equal to said target value;
- d. decomposing said residual contract in said BIC basis; and,
- e. reporting said residual contract in a net profit or loss as the non-hedging part of said derivatives contract.

**273.** The computer program product of claim 272 wherein in said residual contract the held asset position in the portfolio is short if the held asset is a short position.